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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/791,312

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EXAMINER

ZAMAN, FAISAL M

ART UNIT

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2111

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/791,312	Applicant(s) SRINIVASAN ET AL.	
	Examiner Faisal Zaman	Art Unit 2111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 29, 34, 38, and 42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bronson et al. ("Bronson") (U.S. Patent No. 6,973,528) in view of Yang et al. ("Yang") (U.S. Patent No. 5,606,665) and DiMambro et al. ("DiMambro") (U.S. Patent Application Publication No. 2004/0177164).

Regarding Claims 29, 34, 38, and 42, Bronson teaches a method comprising:

Receiving, at a bridge device (Bronson, Figure 3, item 200, Column 3, lines 54-60), a read request across an expansion bus (Bronson, Figure 3, item 206) from an expansion device (Bronson, Figure 3, item 250, Column 4, lines 14-16);

Issuing a read request from the bridge device across a system bus (Bronson, Figure 3, item 210) to a portion of a system memory (Bronson, Figure 3, item 208, and Figure 2, item 114) predetermined to have data associated with the read request (Bronson, Figure 3, item 254, Column 4, lines 19-20);

Bronson does not expressly teach wherein the portion of system memory is predetermined to have descriptor addresses;

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Receiving descriptor blocks including descriptor data at the bridge device across the system bus, wherein the descriptor data includes a transmit size, a location of the transmit data, and an address of the data to be transmitted;

Storing the descriptor data in a memory on the bridge;

Transmitting the descriptor blocks to the expansion device across the expansion bus;

Receiving a read request from the expansion device receiving the descriptor blocks for the transmit data associated with the descriptor blocks;

Searching the memory on the bridge for the descriptor addresses; and

If the descriptor addresses are located in the memory on the bridge, fetching the data requested and prefetching any remaining data to match the transmit size.

In the same field of endeavor (e.g. communications networks utilizing descriptors), Yang teaches wherein a portion of system memory (Yang, Figure 1, item 40) is predetermined to have descriptor addresses (Yang, Figure 1, items 60-67, Column 2, lines 31-36);

Receiving descriptor blocks including descriptor data at the bridge device across a system bus (Yang, Figure 1, item 45, Column 3, lines 1-14), wherein the descriptor data includes a transmit size, a location of the transmit data, and an address of the data to be transmitted (Yang, Column 2, lines 59-67);

Storing the descriptor data in a memory on the bridge (Yang, Figure 1, item 75, Column 3, lines 1-14 and Column 5, lines 31-32);

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Searching the memory on the bridge for the descriptor addresses (Yang, Column 4, lines 6-15 and Column 5, lines 34-36); and

If the descriptor addresses are located in the memory on the bridge, fetching the data requested and prefetching any remaining data to match the transmit size (Yang, Column 5 line 37 – Column 6 line 3).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Yang's teachings of communications networks utilizing descriptors with the teachings of Bronson, for the purpose of being able to determine the size and location of a packet of data without having to request it from the target device (see Yang, Column 2, lines 3-6).

Also in the same field of endeavor (e.g. using descriptors in electronic communications), DiMambro teaches transmitting descriptor blocks to an expansion device across an expansion bus, and receiving a read request from the expansion device receiving the descriptor blocks for the transmit data associated with the descriptor blocks (DiMambro, Page 1, paragraph 0002; ie. the computer system transmits descriptors to a communication device [e.g. network interface circuit], which in turn requests the data associated with the descriptor [e.g. performs a read request] to transmit on the network).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined DiMambro's teachings of using descriptors in electronic communications with the teachings of Bronson, for the purpose

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of preventing overprefetching or underprefetching by informing a requesting device of data information such as size so that only that amount of data is requested.

3. **Claims 30, 31, 35, 36, 39, and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bronson in view of Yang and DiMambro as applied to Claims 29, 34, 38, and 42 above (hereinafter "BYD"), and further in view of Berry et al. ("Berry") (U.S. Patent No. 6,766,511).

Regarding Claims 30, 35, and 39, BYD teaches storing the descriptor data (Yang, Figure 1, item 75, Column 3, lines 12-14).

BYD does not expressly teach storing the descriptor data in a hash table.

In the same field of endeavor (e.g. storing data for executable modules), Berry teaches the use of a hash table for storing packet addresses and lengths (Berry, Column 26, lines 28-34).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Berry's teachings of storing data for executable modules with the teachings of BYD, for the purpose of having efficient access to information (ie. descriptor data) related to a data packet.

Regarding Claims 31, 36, and 40, Berry teaches wherein searching memory on a bridge further comprises searching the hash table using a read request address as a key (Berry, Column 25 lines 66-67; ie. the pid is directly related to the read request address, see Figure 13A).

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The motivation that was used in the combination of Claim 30, super, applies equally as well to Claim 31.

4. **Claims 32, 37, and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over BYD in view of Schumann et al. ("Schumann") (U.S. Patent No. 6,012,106).

Regarding Claims 32, 37, and 41, BYD does not expressly teach prefetching the data by cacheline, if the descriptor addresses are not located in the memory on the bridge.

In the same field of endeavor (e.g. managing data prefetch in memory read operations), Schumann teaches prefetching transmit data by cacheline, if descriptor addresses are not located in a memory on a bridge (Schumann, Column 3, lines 49-59).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Schumann's teachings of managing data prefetch in memory read operations with the teachings of BYD, for the purpose of providing a fast access time for the data read request.

5. **Claim 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over BYD in view of Ong (U.S. Patent No. 5,815,662).

Regarding Claim 33, BYD does not expressly teach wherein storing the descriptor data comprises determining that the memory on the bridge is full; discarding

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an oldest descriptor in the memory on the bridge; and storing the descriptor in the memory on the bridge.

In the same field of endeavor (e.g. scheduling of sending data across a network), Ong discloses a method comprising:

Determining that a memory on a bridge is full (Ong, Figure 2, item 30, Column 4, lines 22-24);

Discarding an oldest descriptor entry in the memory on the bridge (Ong, Figure 2, item 30, Column 4, lines 22-24); and

Storing the descriptor in the memory on the bridge (Ong, Figure 2, item 24).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined Ong's teachings of scheduling of sending data across a network with the teachings of BYD, for the purpose of minimizing unnecessary repetitive accesses to data storage devices (see Ong, Column 2, lines 23-27).

Response to Arguments

6. Applicant's arguments filed 4/30/2007 have been fully considered but they are not persuasive.

Regarding Claims 29, 34, 38, and 42, Applicant argues that "[t]he combination does not teach fetching the transmit data associated with the descriptor blocks", and further "Yang teaches prefetching the descriptor blocks to a network adapter across a system bus in order to designate the descriptor blocks as having data, then the data is

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written directly into the system memory buffers". The examiner respectfully disagrees. Contrary to Applicant's argument, Yang does in fact teach this limitation. The portion of Yang cited by Applicant is in fact referring to data *received* from the network 30 ("[d]ata is *received* and processed in the present invention as shown in the flow chart in Fig. 3", Column 4, lines 5-6). However, the argued limitation is specifically referring to *transmitting* data to an expansion device ("fetching the *transmit* data requested and prefetching any remaining *transmit* data to match the *transmit* size"). As can be seen in Column 3, lines 26-43 and Column 5 line 21 – Column 6 line 3 of Yang, the transmit buffer descriptors 64-67 are used for the purpose of prefetching any available data from transmit buffers 54-57, and then transmitting that prefetched data over the network 30 to a networked/expansion device.

Applicant also argues that "[t]he combination does not teach a transmit size", and further "[i]f the transmit size were known, there would be no need for the mechanisms described at col. 4, lines 33-47, in which a determination is made as to whether more descriptors are needed, based upon not having reached the end of the packet." The examiner respectfully disagrees. Similar to the previous argument, the cited portion discusses operations when a data packet is *received* from the network 30. However, as discussed above, when a data packet is to be transmitted over the network 30, the transmit descriptors 64-67 clearly teach the size of the data to be transmitted stored in the associated transmit buffers 54-57, see Figure 2, item 116 and Column 2, lines 64-67. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e.,

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characteristics of the claimed "transmit size", see Remarks, Page 8, paragraph 1) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Finally, Applicant argues that "[t]he combination is invalid", and further "[n]o apparent gain would be made in that system (Bronson) in using descriptor rings as disclosed in Yang." The examiner respectfully disagrees. Contrary to Applicant's argument, as discussed in the previous Office Action, the motivation to combine Yang's teachings of descriptors with the teachings of Bronson would be for the purpose of being able to determine the size and location of a packet of data without having to specifically request it from the target device, decreasing system latency (see Yang, Column 2, lines 3-6).

Therefore, the claims stand as previously rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faisal Zaman whose telephone number is 571-272-6495. The examiner can normally be reached on Monday thru Friday, 8 am - 5:30 pm, alternate Fridays off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571-272-3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FAZ

Faisal Zaman
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